

Trend Study 10-26-00

Study site name: Bitter Creek .

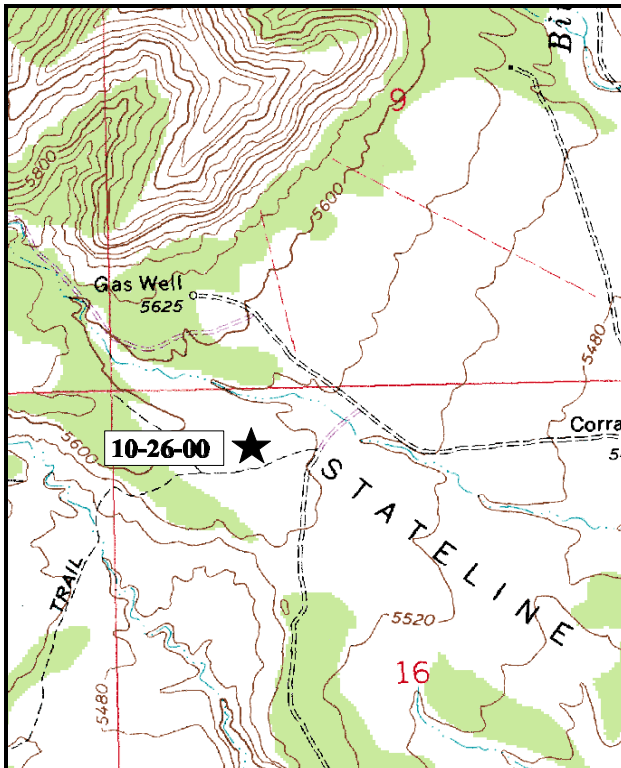
Range type: Big Sagebrush .

Compass bearing: frequency baseline 291°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

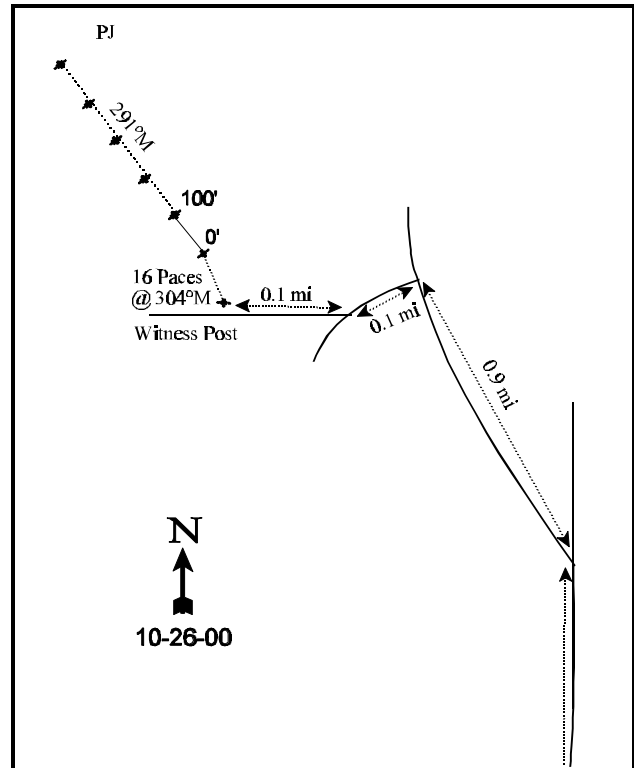
LOCATION DESCRIPTION

Take I-70 exit #225 Westwater and turn left to the Book Cliff area. Travel 0.35 miles to a “T” intersection and turn right (northeast). Proceed 2.2 miles to a fork and keep right. Stay on the main road for 6.35 miles to a dirt road on the left. Turn left traveling north-northwest. Proceed 4.2 miles and stay left on the main road. Continue 1.7 and turn right. Travel another 4.25 to a fork. Turn left at this fork and go 0.9 miles. At the next fork turn left and go 0.1 miles. Then take the right fork and go 0.1 miles to the witness post on the right side of the road. The 0-foot stake is 16 paces away at 304°M.



Map Name: Bryson Canyon .

Township 17S, Range 25E, Section 16



Diagrammatic Sketch

UTM. 4348535.088 N, 623523.418 E

DISCUSSION

Trend Study No. 10-26

The Bitter Creek transect is a new trend study established to monitor essential winter range for big game, primarily elk. The site is located near the Utah-Colorado state line on the South Book Cliffs. The area has a gentle slope (5%) and a southeast exposure at an elevation of 5,500 feet. The transect was placed on the alluvial fan that was deposited where Bitter Creek comes off of the cliffs. The site lies in a Wyoming big sagebrush flat surrounded by stands of pinyon-juniper. According to DWR biologists, a moderate herd of elk are year round residents to this area. Pellet group transect data from 2000 estimate high elk use at 82 elk days use/acre (203 edu/ha) and light use by deer at 4 deer days use/acre (10 ddu/ha).

Soils are of sandy clay loam texture with an average temperature of nearly 63°F at 11 inches in depth. Estimated effective rooting depth is only about 12 inches. A profile stoniness index shows the majority of rock to occur between 4-12 inches in depth. Phosphorus is low at 4.5 ppm, where 10 ppm has been shown necessary for normal plant growth and development. Soils are neutral in reactivity (pH of 7.1) and organic matter is very low at 0.4%. Shrub interspaces are bare with pedestaling occurring around and underneath shrub canopies. Some heavy localized erosion was noted in the general area of this transect with deep gullies, but erosion is not as severe directly on the site with the gentle slope. Currently, vegetation and litter cover appear to be adequate to minimize erosion.

Wyoming big sagebrush is the key browse species and it provides 98% of the browse cover and 84% of the total vegetative cover at this site. Sagebrush cover is estimated at 20% with an estimated 5,320 plants/acre. Age class composition shows the population to consist of 44% mature plants with a moderately high rate of decadency (56%). Forty-six percent of the decadent plants are classified as dying and 27% of the population displaying poor vigor. Recruitment and biotic potential are currently nonexistent. Use is at a moderate to heavy level with 59% showing moderate use and 24% displaying heavy use. This overly mature stand of sagebrush needs to be thinned both to increase sagebrush reproduction and also to rejuvenate the understory which is undoubtedly suppressed by high sagebrush cover and density. Leader growth is sparse with average growth being about 4 inches. This is a dry site and the sagebrush appears to be showing the effects of the extended drought. Other browse include: broom snakeweed and spiny hopsage. Snakeweed density is estimated at 620 plants/acre with 68% of the population being mature plants.

Herbaceous vegetation is sparse and found mainly underneath sagebrush canopies. Cheatgrass is the most abundant grass having a quadrat frequency of 72%. Mutton bluegrass and bottlebrush squirreltail were the only perennial grasses sampled in 2000. These species are not as abundant as cheatgrass in nested and quadrat frequency values, but do provide as much cover. Grasses contribute only 3% average cover at the present time. Forbs are infrequent with 5 perennial and 2 annual species being sampled in 2000. Forbs provide less than one-half of one percent cover. The high density and cover from sagebrush has suppressed the herbaceous component in this vegetative community. The population would have to be reduced if the understory is ever going to improve.

2000 APPARENT TREND ASSESSMENT

Trend for soil appears stable, but is somewhat vulnerable to high intensity thunderstorms with very little herbaceous cover on the site. The ratio of protective ground cover to bare soil is still appears adequate to protect against severe erosion at the present time. The browse population appears to be in a state of decline with no recruitment, high decadency (56%), and 46% of the decadent plants classified as dying. Also, 27% of the sagebrush display poor vigor. Sagebrush density and cover are very high and need to be thinned to increase vigor and reproduction as well as to rejuvenate the understory. The understory is depleted and will remain so without some type of treatment to reduce sagebrush density and cover.

HERBACEOUS TRENDS --

Herd unit 10 , Study no: 26

T y p e	Species	Nested Frequency	Quadrat Frequency	Average Cover %
		'00	'00	'00
G	Bromus tectorum (a)	203	72	1.02
G	Poa fendleriana	114	40	1.09
G	Sitanion hystrix	78	36	1.04
G	Vulpia octoflora (a)	4	2	.01
Total for Annual Grasses		207	74	1.03
Total for Perennial Grasses		192	76	2.13
Total for Grasses		399	150	3.17
F	Erodium cicutarium (a)	3	1	.00
F	Erigeron spp.	8	5	.02
F	Erigeron pumilus	15	5	.05
F	Leucelene ericoides	12	4	.05
F	Phlox longifolia	6	2	.01
F	Plantago patagonica (a)	2	1	.00
F	Schoenocrambe linifolia	23	12	.06
Total for Annual Forbs		5	2	0.00
Total for Perennial Forbs		64	28	0.19
Total for Forbs		69	30	0.20

BROWSE TRENDS --

Herd unit 10 , Study no: 26

T y p e	Species	Strip Frequency	Average Cover %
		'00	'00
B	Artemisia tridentata wyomingensis	91	20.00
B	Grayia spinosa	1	-
B	Gutierrezia sarothrae	8	.30
B	Opuntia spp.	6	.18
Total for Browse		106	20.48

BASIC COVER --

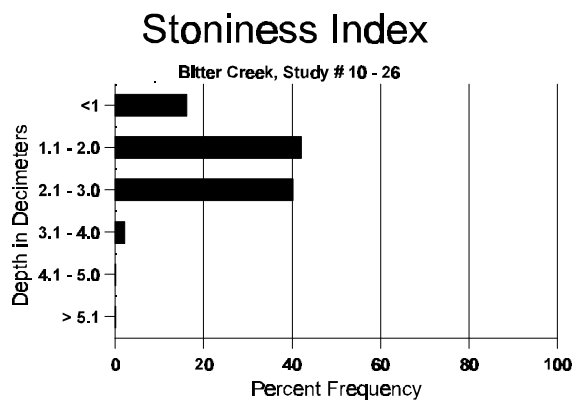
Herd unit 10 , Study no: 26

Cover Type	Nested Frequency	Average Cover %
	'00	'00
Vegetation	329	27.48
Rock	30	.89
Pavement	101	.75
Litter	444	34.70
Cryptogams	287	14.39
Bare Ground	399	44.19

SOIL ANALYSIS DATA --

Herd Unit 10, Study # 26, Study Name: Bitter Creek

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
11.76	62.8 (11.42)	7.1	60.0	17.4	22.6	0.4	4.5	99.2	0.5



PELLET GROUP FREQUENCY --

Herd unit 10 , Study no: 26

Type	Quadrat Frequency	Pellet Transect	
		Pellet Groups per Acre	Days Use per Acre (ha)
	'00	'00	'00
Rabbit	5	52	N/A
Elk	44	1070	82 (203)
Deer	18	52	4 (10)

BROWSE CHARACTERISTICS --

Herd unit 10 , Study no: 26

Order Unit 10, Study No. 20																			
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4					
Artemisia tridentata wyomingensis																			
M	00	9	57	29	5	17	-	-	-	-	117	-	-	-	2340	20	31	117	
D	00	7	52	23	17	32	12	6	-	-	78	-	2	69	2980			149	
X	00	-	-	-	-	-	-	-	-	-	-	-	-	-	760			38	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'00		59%			24%			27%											
Total Plants/Acre (excluding Dead & Seedlings)															'00	5320	Dec:	56%	
Grayia spinosa																			
M	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	10	16	1	
X	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'00		00%			00%			00%											
Total Plants/Acre (excluding Dead & Seedlings)															'00	20	Dec:	-	
Gutierrezia sarothrae																			
S	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4	
Y	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6	
M	00	21	-	-	-	-	-	-	-	-	21	-	-	-	420	8	9	21	
D	00	4	-	-	-	-	-	-	-	-	-	-	-	4	80			4	
X	00	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'00		00%			00%			13%											
Total Plants/Acre (excluding Dead & Seedlings)															'00	620	Dec:	13%	
Opuntia spp.																			
M	00	5	-	-	-	-	-	1	-	-	6	-	-	-	120	5	16	6	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'00		00%			00%			00%											
Total Plants/Acre (excluding Dead & Seedlings)															'00	120	Dec:	-	